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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,954

Applicant(s)

GANI, NARGIS ABDUL

Examiner

Andriae M. Holt

Art Unit

1616

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI.08)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 12, 2010 has been entered.

Claims 1, 3, and 5-12 are pending in the application. Claims 1 and 5 have been amended. Claims 1, 3, and 5-12 will presently be examined to the extent they read on the elected subject matter of record.

Status of the Claims

Rejections and/or objections not reiterated from the previous Office Action are hereby withdrawn. The following rejections are newly applied. They constitute the complete set of rejections presently being applied to the instant application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claims a method of repelling or deterring

slugs comprising obtaining naturally occurring pygidial gland secretions from a ground beetle in a "glass specimen" wherein the secretions include at least one acid and applying the beetle secretions to a portion of a plant whereby the slugs are repelled or deterred. Applicant use of the term "glass specimen" is unclear. While Applicant has support in the Specification for this language, it is not used in the proper context. A specimen is defined as an individual, item, or part considered typical of a group, class, or whole by Merriam-Webster Online Dictionary. The examiner is unsure if Applicant means the secretions are collected on a specimen "plate" or specimen "jar". However, one cannot collect secretions on a "glass specimen". For purposes of examination the examiner is interpreting "glass specimen" as a glass specimen jar or plate.

Claims 5-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claims a slug repellent comprising water and ground beetle pygidial gland secretion comprising at least one acid selected from the group consisting of methacrylic acid, tiglic acid, crotonic acid, formic acid, and acetic acid. What is the composition of the repellent? Is it comprised of water and any one of the acids, not necessarily obtained from the ground beetle or water and secretions obtained naturally from ground beetle gland secretions that contain or happen to have the acids, methacrylic acid, tiglic acid, crotonic acid, formic acid, and acetic acid? Applicant is asked to clarify.

The newly added limitation to claim 5 is confusing, "wherein the beetle is selected from the group of beetles consisting of ground beetles is at least one selected from the group consisting of *P. melanarius*, *H. rufipes*, *P. cupreus*, and *P. madidus*". Applicant should more concisely state the claim, i.e. "wherein the beetle is selected from the group of ground beetles consisting of *P. melanarius*, *H. rufipes*, *P. cupreus*, and *P. madidus*".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dodds' Publication (1997) in view of the Will Publication (Will et al.) (2000), the Scott et al. Publication (1975) and Slugs and Snails Publication (2003).

Applicant's Invention

Applicant claims a method of repelling or deterring slugs comprising the steps of obtaining naturally occurring pygidial gland secretions from a ground beetle wherein the secretions include at least one acid selected from the group consisting of methacrylic

acid, tiglic acid, crotonic acid, formic acid and acetic acid and applying the beetle secretions to a portion of a plant.

***Determination of the scope of the content of the prior art
(MPEP 2141.01)***

The Dodds' Publication teaches there are more than 40,000 described species of ground beetles (Carabidae). The Dodds' Publication teaches that adult carabids held in containers emit a characteristic smell caused by the secretions of the defensive pygidial glands (page 297, col. 1, paragraph 1). The Dodds' Publication teaches that to investigate whether such emissions could be detected by the potential prey, the field slug, *Deroceras reticulatum*, the chemoreceptors in the epithelial pad at the tip of the posterior tentacle were exposed to beetle volatiles delivered in an airstream. Two species of British Carabidae were tested: *Pterostichus melanarius*, a common species found in many habitats and *Zabrus tenebrioides* (page 297, col. 2, paragraph 1). The Dodds' Publication teaches exposure of the olfactory pad to air from a syringe holding an individual *P. melanarius* induced rapid firing in the olfactory nerve lasting for up to 3 minutes after the application of the stimulus. The Dodds' Publication suggests that *D. reticulatum* may be able to detect the presence of potential beetle predators using airborne cues as do aquatic gastropods using waterborne ones (page 298, col. 1, paragraph 1). The Dodds' Publication teaches the ability to detect predatory carabids at a distance may enable *D. reticulatum* to avoid their vicinity and to prime the secretory system for rapid mucus discharge if attacked (page 298, col. 2, paragraph 2).

**Ascertainment of the difference between the prior art and the claims
(MPEP 2141.02)**

Dodds' Publication do not teach the secretions contain methacrylic acid, tiglic acid, crotonic acid, formic acid, or acetic acid, the collection on or in a glass specimen jar, or the application surface is a portion of a plant or that the plant is a pea plant. It is for this reason Will et al. and Slugs and Snails Publication are joined as secondary references.

Will et al. disclose that ground beetles (Carabidae) are well known for their bold chemical signals involving, oozing, spraying and crepitating irritating mixtures of polar and nonpolar compounds (page 460, Introduction). Will et al. disclose that material for chemical analysis were obtained either by removal of gland reservoirs, or as secretion discharged on filter paper. Will et al. further disclose for gland removal, live beetles were placed in a freezer for several minutes and dissected under distilled water. Will et al. disclose whole gland reservoirs were placed in dry-ice cooled reaction vials. Will et al. disclose to collect discharged secretion on filter paper, beetles were held by one leg with forceps and a small strip of filter paper was held near the beetle to catch the secretion as it was sprayed. Will et al. disclose to prevent premature discharge; beetles were temporarily incapacitated by cooling them and then allowed to warm to room temperature while under observation. Will et al. disclose that once beetles became active, defensive secretions was collected on a piece of filter paper (obtaining naturally occurring secretions, instant application) (page 461, Collection of secretion for chemical analysis).

Will et al. disclose in Table 1 on page 463, the different tribes of beetles and the secretions produced. Will et al. disclose the acids include formic, acetic, methacrylic and tiglic acids (methacrylic, formic, acetic and tiglic acids, instant invention). Will et al. disclose the primarily methacrylic and tiglic acid producing tribes *Pterostichini* and *Zabrinini* are very diverse in the temperate region (methacrylic and tiglic acid, instant invention) (page 477, paragraph 2). Will et al. disclose that Blum speculated that the occurrence of formic acid ant alarm pheromone in fast moving arthropods, like ground beetles, had evolved to chemically "hide" a beetle that was in conflict with ants. Will et al. further disclose the discharge of this mixture of chemicals could first deter the immediate threat by its irritating effect (page 477, paragraph 3).

Scott et al. disclose chemical analyses of pygidial gland secretions of Carabidae beetles revealed a diversity of compounds which includes saturated branched fatty acids, formic acid, quinones, cresol, hydroperoxides and hydroquinones (Abstract). Scott et al. disclose that adult *Anthia thoracica* (F.), *Thermophilum homoplutum* (Lequien) and *T. buchelli* (Hope) were collected during November/December near Bronkhorstspuit in the Transvaal, South Africa. Scott et al. disclose the secretions were obtained by "milking" the beetles-application of pressure to the hind-tarsus readily induced these beetles to squirt their secretion into a cooled vial (obtaining naturally occurring secretions from a ground beetle and applying to an application surface, instant invention) (page 805, Materials and Methods). Scott et al. disclose that the repellent efficacy of the secretions of the beetles is indicated by the fact that skin

contact with them resulted in severe burns of two of the authors' hands and faces (page 809, Morphology of the pygidial defense glands, paragraph 3).

Scott et al. disclose the beetles used in the investigation come from the largest anthiine genera in southern Africa. Scott et al. further disclose the secretions of anthiines would appear to be characterized by the presence of formic acid as the major component, and acetic, tiglic, and angelic acids as additional minor components (page 809, Discussion, paragraph 1). Scott et al. disclose the presence of formic acid in all these beetles is interesting since it is a strong common chemical irritant and cytotoxin that is capable of easily penetrating the mucous membranes on sensitive areas of potential vertebrate predators (page 810, paragraph 1). Scott et al. further disclose that although the anthiines produce formic acid, they are unique among the carabids in that they produce a mixture of formic acid plus acetic acid and tiglic acid in the same secretion (page 810, paragraph 2) (formic acid, acetic acid and tiglic acid, instant invention).

The Slugs and Snails Publication discloses that in the 1850s, French immigrant Antoine Delmas brought snails to California so he would have an ample supply of escargot. The Slugs and Snails Publication discloses the offspring of those original snails destroy millions of dollars worth of California produce every year. The Slugs and Snails Publication further discloses to protect gardens easy solutions can be followed. The Slugs and Snails Publication discloses that equal parts of Heinz White Vinegar and water are mixed in a trigger-spray bottle, patrol garden at night, and spray the solution

directly on slugs. The Slugs and Snails Publication further discloses the gastropods die almost immediately. It is known in the art that vinegar is acetic acid, therefore mixing vinegar and water is mixing acetic acid and water.

Finding of prima facie obviousness
Rationale and Motivation (MPEP 2142-2143)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of the Dodds' Publication, Will et al., Scott et al. and the Slugs and Snails Publication and know that the secretions contain methacrylic acid, tiglic acid, crotonic acid, formic acid, or acetic acid. One skilled in the art at the time the invention was made would have known that the secretions secreted by the ground beetle as taught in the Dodds' Publication contain the various acids because Will et al. teach that acids produced include formic, acetic, methacrylic and tiglic acids and that *Pterostichini* and *Zabrinii species* (the species taught by Dodds' Publication) primarily produce methacrylic and tiglic acids. In addition, Scott et al. teach that repellent efficacy of secretions of ground beetles from the pygidial gland, which contain formic acid, acetic, tiglic, and angelic acids is indicated. As such, the skilled artisan would have been motivated to use the secretions produced by the ground beetle to repel slugs as the Dodds' Publication teaches that odor from the secretions gives *D. reticulatum* (slug) the ability to detect predatory carabids at a distance. This will enable *D. reticulatum* to avoid their vicinity and to prime the secretory system for rapid mucus discharge if attacked.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of the Dodds' Publication, Will et al., Scott et al. and

the Slugs and Snails Publication and collect the secretions on or in a glass specimen jar or plate. One skilled in the art at the time the invention was made would have been motivated to use a glass specimen jar or plate to collect the secretions as a matter of routine experimentation. As taught by Scott et al. pygidial gland secretions can be collected in a cooled vial, therefore, the skilled artisan would find it obvious to use any collection vial or vehicle to collect the secretions. This modification to the claim would not be a non-obvious change for the skilled artisan.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of the Dodds' Publication, Will et al., Scott et al. and the Slugs and Snails Publication and apply the secretions to a plant surface. One skilled in the art at the time the invention was made would have been motivated to use the natural secretions of a ground beetle and apply the secretions to a plant surface because the Slugs and Snails Publication teaches that vinegar (acetic acid) can be applied to plants and slugs to protect the plants from slug damage. Therefore, the skilled artisan would have a reasonable expectation of success in applying the natural secretions of a ground beetle, which includes acetic acid; to a plant surface to repel or kill slugs as the chemicals are known irritants and cytotoxins.

Each of the references is silent to the plant being a pea plant, however, the compositions of the prior art, particularly, the combination of the teachings of Dodds' Publication and Will et al., are the same as Applicant's composition, naturally obtained secretions of ground beetles that contain formic acid, acetic acid and tiglic acid. Thus,

the skilled artisan would recognize that a composition is inseparable from its properties. Hence, all the properties associated with Applicant's compositions would also be possessed by the compositions of the prior art and that the compositions can be applied to pea plants.

Given the state of the art as evidenced by the teachings of the cited references, and absent any evidence to the contrary, there would have been a reasonable expectation of success in combining the teachings of the cited references to produce a slug repellent from ground beetle secretions that are known irritants and cytotoxins.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited reference.

Response to Arguments

Applicant's arguments filed March 12, 2010 have been fully considered but they are not persuasive. Applicant argues that the combination of references does not teach obtaining the secretions in a glass vessel. Applicant also argues that the combination does not provide a method whereby the acids are applied to a plant and the Slugs and Snails Publication teaches away from applying acids to the plant for fear of damaging the foliage.

In response to Applicant's arguments that the combination of references does not teach obtaining the secretions in a glass vessel, one skilled in the art at the time the invention was made would have been motivated to use a glass specimen jar to collect

the secretions as a matter of routine experimentation. As taught by Scott et al. pygidial gland secretions can be collected in a cooled vial, therefore, the skilled artisan would find it obvious to use any collection vial or vehicle to collect the secretions. This modification to the claim would not be a non-obvious change for the skilled artisan.

In response to Applicant's argument that the combination does not provide a method whereby the acids are applied to a plant and the Slugs and Snails Publication teaches away from applying acids to the plant for fear of damaging the foliage, the examiner respectfully disagrees. The Slug and Snails Publication does not teach away from using the acid. While the publication teaches not to make the solution stronger than equal parts vinegar and water for risk of damaging plant foliage if the solution is stronger than equal parts vinegar and water, it does not teach not applying the solution to plant parts. It would be obvious to the skilled artisan that if a solution is being sprayed on a slug, near a plant, the plant would be sprayed, as well. In addition, acetic acid is acetic acid, therefore, if the acetic acid from Slugs and Snails Publication would damage foliage, then the acetic acid from Applicant's invention would damage foliage also. A compound cannot be separated from its properties.

Claims 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bug Juice Spray (2000) and Curative Control (2004) in view of the Will Publication (2000).

Applicant's Invention

Applicant claims composition comprising water; and ground beetle pygidial gland secretion comprising at least one acid selected from the group consisting of methacrylic acid, tiglic acid, crotonic acid, formic acid, and acetic acid.

***Determination of the scope of the content of the prior art
(MPEP 2141.01)***

The Bug Juice Spray Publication teaches that crushing insects, especially those that are the pests you are trying to rid yourself of, can be helpful in that it releases that insects "alarm pheromone". This in turn tells other insects to stay away because they found peril in this area. The Bug Juice Spray Publication teaches it also tells the insect's predator that, "hey, we can find a meal in the yard, follow me!" (paragraph 2). The bug Juice Spray Publication teaches to make the juice of bug stuff, collect a half cup of the problem insect(s). Place in a blender or mash with a mortar and pestle or some other way until really juicy. Add 2 cups of water to the bugs, liquefy. Dilute 1/4 cup of juice with 1 or 2 cups of water in a small sprayer (paragraph 4). Spray both sides of leaves.

The Curative Control Publication teaches how to make bug juice spray. Materials needed include ½ cup of beetles, mortar and pestle or grinder, and strainer. The method of preparation includes pound or grind beetles in 2 cups of water, strain, and dilute ¼ cup of this concentrate in 1-2 cups water. Use the spray to control the same pest species that is in the mixture. The odor of crushed beetles sprayed on the plants repels

new beetles of the same species to come. The odor also attracts the natural enemies (entire document).

**Ascertainment of the difference between the prior art and the claims
(MPEP 2141.02)**

The Bug Juice Spray Publication and The Curative Control Publication do not teach the specific use of ground beetle secretions that contain methacrylic acid, tiglic acid, crotonic acid, formic acid, or acetic acid. It is for this reason Will et al. is joined as a secondary reference.

The teachings of Will et al. with respect to the 35 U.S.C. 103(a) rejection is hereby incorporated and are therefore applied in the instant rejection as discussed above.

***Finding of prima facie obviousness
Rationale and Motivation (MPEP 2142-2143)***

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of the Bug Juice Spray Publication, the Curative Control Publication and Will et al. and use ground beetle secretions containing methacrylic acid, tiglic acid, crotonic acid, formic acid, or acetic acid. The Bug Juice Spray Publication and the Curative Control Publication each teach the use of ground or pulverized bugs, particularly beetles, combined with water to produce a spray that control pests. The publications teach crushing the insects releases the insects "alarm pheromone". One skilled in the art at the time the invention was made would have been motivated to use ground beetle in bug juice spray preparation because Will et al. teach that the defensive acids produced from ground beetles include formic, acetic,

methacrylic and tiglic acids and that *Pterostichini* and *Zabrini species* primarily produce methacrylic and tiglic acid. As such, the skilled artisan would have had a reasonable expectation of success that the ground or pulverized ground beetle used in a bug juice spray would contain the alarm pheromones because the secretions would be released as the beetles are crushed.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited reference.

Response to Arguments

Applicant's arguments filed March 12, 2010 have been fully considered but they are not persuasive. Applicant argues that nowhere in the combination of references is provided that the beetles from where the secretions are obtained are the same beetles.

In response to Applicant's arguments, the Curative Control Publication provides for the making of 'bug juice' from beetles. However, the Curative Control Publication does not limit the beetles to any particular species of beetle. Therefore, the skilled artisan would have been motivated to make 'bug juice' using any beetle, including the beetles taught by Will et al., *Pterostichini and Zabrini species*, that produce methacrylic and tiglic acid. As such, the skilled artisan would have had a reasonable expectation of success that the ground or pulverized ground beetle used in a bug juice spray would contain the alarm pheromones because the secretions would be released as the beetles are crushed.

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None of the claims are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McCullough Publication, Chemical Analysis of the Scent Fluid of *Pasimachus californicus* and *P. duplicatus*, Annals of Entomological Society of America (1969).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andriae M. Holt whose telephone number is (571)272-9328. The examiner can normally be reached on 7:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richter Johann can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andriae M. Holt
Patent Examiner
Art Unit 1616

/John Pak/
Primary Examiner, Art Unit 1616